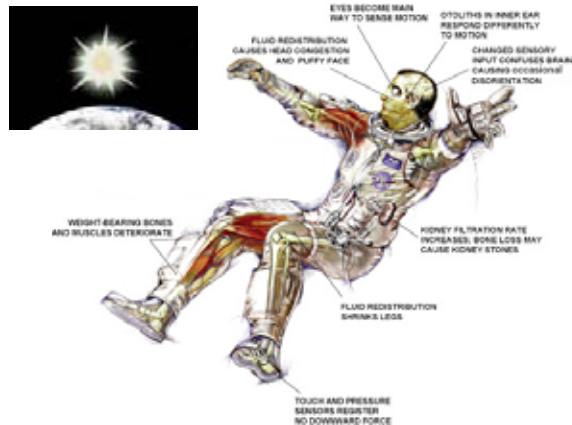


Eye is a Window to the Body

AIM: DIAGNOSE DISEASES NONINVASIVELY LONG BEFORE CLINICAL SYMPTOMS APPEAR

Effects of Space Travel on the Human Body are Similar to that of Aging

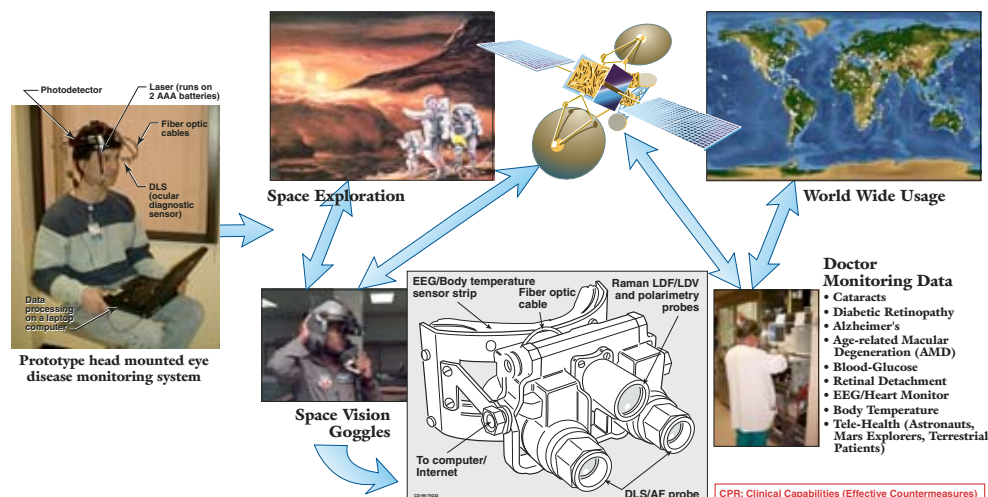


NASA developed compact fiber optic probes

Optical Technique	Disease	Potential Counter-measures	Collaborator (Status)
Dynamic Light Scattering (DLS)	Cataract Radiation Damage Diabetes Vitreopathy Uveitis Cholesterol Alzheimer's	Anti-oxidants (red wine, green tea, Vitamins), Aldose Reductase Inhibitors, Pentethine, Sun glasses Better Protective Shields Anti-inflammatories, anti-oxidants, hormone replacement therapies	NIH (Clinical) Oakland University/(Animals) FDA/(Animals) Doherty/(Cadavers) NIH/(Experimental) Harvard, Mass General, Brigham Women's (Animals)
Cornical Auto-Fluorescence	Diabetic Retinopathy	Blood-glucose management	University of Brescia, Italy/Clinical
Laser Doppler Velocimetry (LDV)	Retinal Diseases (AMD) (Diabetic retinopathy)	Better optic nerve head & choroidal flow Diabetes control	Doherty Eye Institute (Experimental)
Raman	Age-related Macular Degeneration (AMD) Measure: Carotenoid Pigments	Lutein (spinach, broccoli, etc) and Zeaxanthin (peaches, corn, etc).	Doherty Eye Institute (Experimental)
Polarimetry	Diabetes	Blood-glucose monitoring (Better Compliance)	University of Brescia, (Experimental)
Oximetry	Diabetes, Stroke, Trauma		University Hospital/CWRU

Present and Future

Remote Health Monitoring: For the Benefit of All Human Kind



KC-135 LDF Measurements



Ocular Blood Flow Monitoring in 0 g in a Test Subject Onboard the KC-135 Airplane



- **The NASA Vision:**
To improve life here,
To extend to there,
To find life beyond.

- **The NASA Mission:**
To understand and protect our home planet,
To explore the universe and search for life,
To inspire the next generation of explorers...
as only NASA can!

Here on Earth LDF Can Be Used for the Early Detection of AMD (Age Related Macular Degeneration)

AMD damages and destroys the central vision of up to 1 in 3 Americans in their lifetime and has no known cause or cure.



By the year 2025 the population of people over the age of 65 in the U.S. will be 6 times higher than in 1990. AMD will soon take on aspects of an epidemic.

(Carl Kupfer, MD, Director HEI/NIH)